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ABSTRACT

In a longitudinal investigation, a model was developed to assess behavioral, social, and cognitive influences on the academic self-concept of 104 adolescents (57 males, 47 females) who participated in the Fullerton Longitudinal Study between 18 months and 17 years of age. The basic model was Academic Self-Concept = Constant + Behavior + Social + Cognitive. A stepwise regression model across gender indicated that academic achievement increasingly predicted academic self-concept dimensions over the developmental period, that behavioral adjustment remained a stable predictor over time, and that temperament dimensions were contributory through childhood and preadolescence. Regression of participants within gender showed promising, although mixed results; for females, cognitive factors were most contributory; for males, behavior and academic adjustment were the most influential. A follow-back analysis determined that low, moderate, and high levels of adolescent self-concept were predictable. In particular, children with low academic self-concept were reported to manifest less persistence and higher distractibility than those who reported high academic self-concept. In addition, children with higher intelligence and greater academic achievement displayed higher academic self-concept than their counterparts. Results of the current study suggest that educators and counselors should evaluate their students at as early as age 6, so developmental factors that might hinder later academic achievement can be addressed and managed appropriately. (Contains 2 tables and 21 references.) (Author/SLD)

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Behavioral, social, and cognitive predictors of
adolescent academic self-concept: A longitudinal investigation

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Abstract

Few studies have examined the mechanisms that account for the development of academic self-concept in children. In the current longitudinal investigation, a model was developed to assess behavioral, social, and cognitive influences on the academic self-concept of 104 adolescents (57 male, 47 female) who participated in the Fullerton Longitudinal Study between 18 months and 17 years of age. The basic model was $\text{Academic Self-concept} = \text{Constant} + \text{Behavior} + \text{Social} + \text{Cognitive}$. A stepwise regression model across gender indicated that academic achievement increasingly predicted academic self-concept dimensions over the developmental periods, that behavioral adjustment remained a stable predictor over time, and that temperament dimensions were contributory through childhood and pre-adolescence. Regression of participants within gender showed promising, although mixed results: for females, cognitive factors were most contributory; for males, behavior and academic achievement were most influential. A follow-back analysis determined that low, moderate, and high levels of adolescent academic self-concept were predictable. In particular, children with low academic self-concept were reported to manifest less persistence and higher distractibility than those who reported high academic self-concept. In addition, children with higher intelligence and greater academic achievement displayed higher academic self-concept than their counterparts. Results of the current study suggest that educators and counselors should evaluate their students as early as age 6, so that developmental factors which might hinder later academic achievement can be addressed and appropriately managed.

Overview

Educators and counselors in school settings have recognized that the academic self-concepts of children influence their later academic achievement. Academic self-concept has been correlated with variables such as achievement in mathematics and science (House, 1995, 1996), grade performance, (House, 1997), academic plans (Murdock, Anderman, & Hodge, 2000), and school withdrawal (House, 1993). Yet, no studies have been found by this author that examine the mechanisms which account for the development of academic self-concept in children. In the current longitudinal investigation, a model was developed to assess behavioral, social, and cognitive influences at different developmental periods on the academic self-concept of adolescents.

Method

Participants

Participants were 104 adolescents (57 male, 47 female) who participated in the Fullerton Longitudinal Study between 18 months and 17 years of age. The original sample included 130 infants selected from birth notifications in hospitals in Orange County, California who were free of neurological and physiological abnormalities. Of these infants, 52% were male, 90% were Caucasian, and all were normal term and weight. In addition, the sample represented a wide range of middle-class families as measured by the Hollingshead Four Factor Index of Social Status (Hollingshead, 1975). Approximately 84% of the original sample remained at age sixteen.

Measures

- ◆ Academic self-concept was measured with the Self-Description Questionnaire-II (SDQ-II, Marsh, 1990) when participants were 16 years.
- ◆ Mothers reported the behavioral adjustment of their child from age 6 to 15 with the Child Behavior Check List (CBCL; Achenbach, 1991; & Edelbroch, 1983).
- ◆ Social factors included family environment and temperament. Family environment was measured via the Cohesiveness and Conflict scales of the

Family Environment Scale, FES; Moos & Moos, 1981) when study children were 7, 8, 10, 12, and 14. Mothers rated the temperament of their child at age 8, 10, and 12 years with the Middle Childhood Temperament Questionnaire (MCTQ; Hegvik, McDevitt, & Carey, 1982), and at age 14 with the Dimensions of Temperament-Revised (DOTS-R; Windle & Lerner, 1986).

- ◆ Cognitive factors included academic achievement and intelligence. Academic achievement was measured with the Woodcock-Johnson Psycho-Educational Battery (WJPEB; Woodcock & Johnson, 1977) at ages 7 through 10, and with its Revised edition (WJ-R; Woodcock & Johnson, 1989) at 11 through 15. Intelligence was assessed with the Wechsler Intelligence Scale for Children-Revised (WISC-R; Wechsler, 1974) at ages 6, 7, 8, and 12, and at age 15 with the WISC-III (Allen & Thorndike, 1995).

Data Analysis

Data composites were created to yield three time periods: ages 6 to 9 (Middle Childhood), 10 to 12 (Pre-Adolescence), and 13 to 15 (Adolescence). The basic model was Academic Self-concept = Constant + Behavior + Social + Cognitive. A stepwise multiple regression analysis provided a method for understanding the unique and related contributions of these variables.

Results and Discussion

A stepwise regression model across gender indicated that academic achievement increasingly predicted academic self-concept dimensions over the developmental periods, that behavioral adjustment remained a stable predictor over time, and that temperament dimensions were contributory through childhood and pre-adolescence. Regression of participants within gender over developmental epochs showed promising, although mixed results: for example, for adolescent females, cognitive factors were most contributory; for adolescent males, behavior and academic achievement were most influential (see Table 1).

A follow-back analysis, via Henry, Caspi, Moffit, and Silva (1996), determined that low, moderate, and high levels of adolescent academic self-concept were predictable from certain variables (see Table 2). In particular, children with low academic self-concept were reported to manifest less persistence and higher distractibility than those who reported high academic self-concept. In addition, children with higher intelligence and greater academic achievement displayed higher ratings of academic self-concept than did their counterparts.

These results are parallel with current research. For example, studies such as that of Calsyn and Kenny (1977) indicate that prior achievement is contributory to producing later academic self-concept. However, it is possible that the relationship between academic self-concept and academic achievement may be reciprocal or even change direction at various points of development (Wigfield & Karpathian, 1991). Tests of these relations were beyond the scope of the current study, although follow-up is indicated.

Results of the current study suggest that educators and counselors should evaluate their students as early as age 6, rather than waiting until later periods, so that developmental factors which might hinder later academic achievement can be addressed and appropriately managed. Frame of reference effects, dubbed the Big-Fish-Little-Pond Effect (BFLPE) by Marsh and Parker (1984) suggest that students form their own academic self-concepts by comparing their performances in school against their peers, rather than against a broader frame of reference such as community or national standards. Therefore, teaching strategies that decrease emphasis on social comparison, yet focus on individual skills and deficits, might offer guidance to educators and psychologists. For example, decreasing the emphasis on letter-grading and within-group competition, and substituting mastery-oriented learning and evaluation, may be beneficial, and merits testing (Strein, 1993).

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Table 1

Stepwise multiple regression analyses of female and male participants using behavioral, social, and cognitive variables within developmental eras to predict academic self-concept at age sixteen

Academic Self-Concept of Females									
Developmental Era	Domain	Predictor	Multiple R	R ² Change	Adjusted R ²	F	Change	F	Df
Childhood	Social	Persistence	.48	.23	.21	10.33**	1,35		
	Cognitive	Intelligence	.59	.12	.31	6.46***	2,34		
	Behavior	Externalizing	.32	.11	.08	4.12*	1,35		
Pre-adolescence	Social	Distractibility	.45	.10	.16	4.17*	2,34		
	Cognitive	Academic	.60	.15	.30	7.77**	3,33		
		Achievement							
Adolescence	Cognitive	Academic	.52	.27	.25	12.71**	1,35		
		Achievement							

*p<.05, **p<.01, ***p<.001

Table 1, Continued

Academic Self-Concept of Males						
Developmental Era	Domain	Predictor	Multiple R	R ² Change	Adjusted R ²	F Change Df
Childhood	Behavior	Internalizing	.30	.09	.07	4.41* 1,45
	Cognitive	Academic	.71	.42	.49	37.77*** 2,44
		Achievement				
Pre-adolescence	Behavior	Internalizing	.29	.08	.06	4.13* 1,45
	Social	Distractibility	.42	.09	.14	5.06* 2,44
	Social	Predictability	.51	.08	.20	4.50** 3,43
	Cognitive	Academic	.73	.28	.49	25.71*** 4,42
		Achievement				
Adolescence	Behavior	Externalizing	.32	.10	.08	4.99* 1,45
	Cognitive	Academic	.70	.38	.46	32.62*** 2,44
		Achievement				

*p<.05, **p<.01, ***p<.001

Table 2

Follow-back analysis of antecedents of low, moderate, and high academic self-concept at age sixteen

Academic Self-Concept							
Era	Domain	Predictor	Group	Low	Moderate	High	df
Differences							
Childhood	Social	Cohesiveness	L,H	7.41(1.75)	7.99(1.22)	8.56(.64)	3.62*
	Cognitive	Ac. Achievement	L,M,L,H M,H	49.41(18.00)	67.37(19.48)	83.63(15.90)	14.18***
		IQ	L,M,L,H M,H	105.06(6.50)	114.98(11.82)	128.08(9.56)	19.68***
Pre-Adol.	Social	Lack of Persistence	L,H	2.66(.62)	2.39(.68)	2.02(.55)	4.11*
		Distractibility	L,H M,H	4.42(.85)	3.91(.82)	3.26(.90)	7.98***
	Cognitive	Ac. Achievement	L,M,L,H M,H	61.38(20.44)	78.39(15.36)	91.09(9.56)	15.74***
Adolescence		IQ	L,M,L,H M,H	104.25(9.97)	113.00(10.62)	126.50(8.51)	21.20***
	Social	Task Orientation	L,H	2.52(.64)	2.73(.56)	3.04(.36)	4.20*
		Ac. Achievement	L,M,L,H M,H	59.55(24.58)	78.63(17.96)	95.89(3.71)	18.52***
	Cognitive	IQ	L,H M,H	99.50(11.84)	106.57(12.29)	120.58(10.67)	15.06***

13 *p<.05, **p<.01, ***p<.001

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